AUTODESK INC. & ANOR.

v.

MARTIN PATRICK DYASON & ORS.

HIGH COURT AUSTRALIA
MASON CJ
BRENNAN J
DEANE J
DAWSON J
GAUDRON J
[F.C. 92/001]
12 FEBRUARY 1992

COPYRIGHT: *Whether the computer program constituted by the Auto Key lock is a reproduction of the computer program constituted by the AutoCAD lock - Whether the work alleged to infringe copyright sufficiently resembles the copyright work and was produced by the use of the copyright work.*

COPYRIGHT: *Statutory definition of "literary works" - "Computer program" - No definition provided for what constitutes the "reproduction" of a work - Section 10(1) Copyright Act 1968.*

COPYRIGHT: *Distinction between Copyright Law and Patent Law - The traditional dichotomy in law - Of idea and expression of an idea.*

The first appellant, Autodesk Inc., is a Californian company which owns the copyright in a computer program known as "AutoCAD". The AutoCad program enables a user to produce drawings which assist in the drafting of architectural and engineering plans and designs. The letters "CAD" in AutoCAD stand for computer assisted drafting. The second appellant - Autodesk Australia Pty. Ltd. is the exclusive licensee of Autodesk Inc. throughout Australia with respect to its copyright in AutoCAD.

AutoCAD is sold by dealers. The purchasers receive a package including a number of disks which contain software in the form of the drafting program. It is easy to make copies of these disks and it would appear that many users do so, if only for replacement purposes should the original disks be damaged. Copying for that purpose is permitted under s. 43A of the Copyright Act 1968 (Cth) (the Act).

Because the disks are easily copied, there is a danger that persons who have not purchased the disks from an AutoCAD dealer may pirate them by making unauthorized copies. To avoid piracy of this kind, the appellants developed a hardware device, called an "AutoCAD lock" without which the AutoCAD program cannot run. The lock is plugged into the computer and peripheral devices, such as printers or monitors, are in turn plugged into the lock. Without the lock in place the computer will not run the AutoCAD programs, although other programs may be run with the lock in place. A single lock is supplied with each purchase of the AutoCAD package and cannot be purchased separately. The cost of an AutoCAD package is approximately $5,200 which includes the price of AutoCAD lock. Thus even though a purchaser of AutoCAD might make copies of the disks containing the program, with only one lock he can run only one set of disks at a time. That is the purpose of the AutoCAD lock: to ensure that the purchase of a single AutoCAD package does not result in multiple use of the program.

The third respondent, after making a close examination of the operation of the AutoCAD lock, designed an alternative device, called an Auto Key lock, which performs the same function as the AutoCAD lock. With the aid of the second respondents, the Auto Key lock was placed upon the market at a price of about $500.

The appellants succeeded in the Federal Court in an action for infringement of copyright, but an appeal by the respondents to the Full Court of the Federal Court was unanimously upheld. Hence this appeal to this Court by special leave.

The Copyright Amendment Act (1984) (Cth) amended the definitions in s. 10(1) of the Act of "literary work", "adaptation" and "infringing copy" and added new definitions of "computer program" and "material form". [*Inter alia*] - A "computer program" was defined but no definition was provided of what constitutes the "reproduction" of a work.

The appellant's primary submission was that the literary work in respect of which they alleged breach of copyright is a computer program known as AutoCAD which they claimed is also, in part, contained within the product known as the AutoCAD lock. The respondents, on the other hand, denied that any part of the AutoCAD program is contained in the AutoCAD lock or that the AutoCAD lock contains any computer program at all. They also denied that the Auto Key lock is a reproduction in a material form of the AutoCAD program or any part of it. It was not contested that, under the amended legislation, the AutoCAD program, whether as a source program or as an object program, is itself a computer program within the meaning of the Act and is protected by copyright.

Held:

[1] There is no need or to suggest any particular test for determining what is a computer program within the meaning of the statutory definition, for, even assuming that each of the two locks contains a set of relevant instructions, the fact that they do produce the same output in response to a challenge - the fact that they both perform the same function - does not mean that there is any similarity between the two sets of instructions. The fact that each of the two devices has a set of instructions which causes it to perform a particular function which is the same does not mean that each set of instructions is the same.

[2] The significance placed by the learned Judge upon the function of the two locks would appear to be in disregard of the traditional dichotomy in the law of copyright between an idea and the expression of an idea. Copyright does not extend to ideas, or schemes, or systems, or methods, it is confined to their expression; and if their expression is not copied the copyright is not infringed. The distinction has been criticized and it is true that it is often difficult to separate an idea from its expression, but it is nevertheless fundamental that copyright protection is given only to the form in which ideas are expressed, not to the ideas themselves. The protection of ideas, at all events when the subject of manufacture is the province of patent law.

[3] In the present case there can be no doubt about the originality of authorship of the look up table expressed as it is in Widget C. But no reliance was placed upon it as a literary work in itself. It is enough that it forms a substantial part of a computer program which is a literary work itself in respect of which copyright is vested in the first appellant. But the definition of "computer program" makes it plain that a computer program may be in any language, code or notation and need not be in visible form and the definition of "material form" indicates that the reproduction of a computer program need not be visible. I would conclude that the production of the Auto Key lock constitutes an infringement of the copyright in the AutoCAD program, in particular Widget C.

[Appeal allowed.]

Cases referred to:
Computer Edge Pty. Ltd. v. Apple Computer Inc. [1986] 161 CLR 171 ***(dist)***
Autodesk Inc. v. Dyason [1989] 15 IPR 1 ***(cons)***
Dyason v. Autodesk Inc. [1990] 24 FCR 147 ***(cons)***
Apple Computer Inc. v. Computer Edge Pty. Ltd. [1983] 50 ALR 581 ***(ovrl)***
Hollinrake v. Truswell [1894] 3 Ch 420 ***(foll)***
Whelan Associates v. Jaslow Dental Laboratory [1986] 797 F 2d 1222 ***(foll)***
Baker v. Selden [1879] 101 US 99 ***(foll)***
Lotus Dvpt. Corp. v. Paperback Software International [1990] 18 IPR 1 25 ***(foll)***
Victoria Park Racing and Recreation Grounds Co. Ltd. v. Taylor [1937] 58 CLR 479 ***(foll)***

Legislation referred to:
Copyright Act 1968 [Aust], ss. 10(1), 43A

For the appellants - Stephens, Solicitors
For the respondents - Nevett Ford

JUDGMENT

Mason CJ:

We agree with the judgment of Dawson J. We add some supplementary comments.

The definition of "computer program" which was introduced by the 1984 amendments to the Copyright Act 1968, (Cth) (the Act) focuses upon "an expression, in any language, code or notation" (s. 10(1)) of a set of instructions of the designated kind rather than upon the set of instructions itself. The result is that it is arguable that the effect of the 1984 amendments is merely to recognize copyright in a particular existing "expression" or description of the relevant "set of instructions" in some "language, code or notation". That narrow literal construction would, however, partly frustrate the obvious legislative intent to confer real protection upon the actual set of instructions regardless of whether they be actually expressed in written form or merely embedded or stored in a non-sensate form such as electrical impulses on a disk, ROM or EPROM. Indeed, it is arguable that it would deprive the 1984 amendments of any significant effect since the three justices who constituted the majority of the Court in *Computer Edge Pty. Ltd. v. Apple Computer Inc.* [1986] 161 CLR 171 expressly held or assumed that copyright subsisted in the written expression of the source code while none of them suggested that copyright would not have subsisted in an actual written expression (in language, code or notation) of the object code, if one had existed *ibid.*, at pp. 183, 200 and 214.

When the definition of "computer program" is read in its context in the Act, however, it appears to us to be clear that the reference to "an expression, in any language, code or notation" should not be understood as referring only to an actual written expression or representation of a set of instructions with the result that copyright does not exist at the time of an alleged infringement unless such a written expression actually exists or has existed at that time. The definition should be understood as conferring protection upon the set of instructions itself but as doing so in a way which is adapted to the nature of copyright. That is to say, the stored set of instructions in a non-sensate form such as electrical impulses is itself protected on the basis that copyright actually subsists in any expression or description of it which can theoretically be made in language, code or notation. On that basis, the test of originality is satisfied by the originality of the set of instructions and any unauthorized expression of it in language, code or notation will infringe the copyright in the

computer program. Where a set of instructions does not itself satisfy the requirement of originality, that requirement can, of course, be satisfied by the originality of an expression or description of it in language, code or notation with the result that copyright is confined to that particular expression or description alone.

As we followed the argument, it is common ground that Widget C (a program file in the AutoCAD software) was, for relevant purposes, a "computer program" in that it was a set of instructions of the kind designated by the definition. There is no dispute about its originality. When the definition of "computer program" in s. 10(1) of the Act is understood in the above sense, the effect of the Act is that, at relevant times, copyright existed in any expression of Widget C in language, code or notation. The evidence disclosed that there was "encrypted" or stored in Widget C a "look-up table" which can be expressed in binary notation as an irregular arrangement or series of 127 ones or zeros. Once the respective starting points are identified, that expression of that look-up table corresponds precisely with the expression in binary notation of the 127-bit series embedded or stored in the EPROM in the Auto Key lock see, for example, Exh. D, pp. 1 and 4. The look-up table in Widget C constituted "a substantial part of Widget C. As Dawson J points out, Mr. Kelly's use of an oscilloscope to read the output of a stimulated AutoCAD lock involved an indirect copying of the look-up table. Indeed, the whole point of the exercise was to reproduce whatever was necessary to match the requirements of that look-up table. In these circumstances, the 127-bit series embedded in the EPROM in the Auto Key lock constituted a reproduction in a material form, that is, a "form (whether visible or not) of storage from which the work or adaptation, or a substantial part of the work or adaptation, can be reproduced": (see the definition of "material form" in s. 10(1) of the Act) of a substantial part of any actual or theoretical "expression" in binary "notation" of the "set of instructions" constituting Widget C. It follows that the 127-bit series embedded in the EPROM in the Auto Key lock infringed the appellants' copyright in the computer program, Widget C.

Dawson J:

The first appellant, Autodesk Inc., is a Californian company which owns the copyright in a computer program known as "AutoCAD". The AutoCAD program enables a user to produce drawings which assist in the drafting of architectural and engineering plans and designs. The letters "CAD" in AutoCAD stand for "computer assisted drafting". The second appellant, Autodesk Australia Pty. Ltd., is a Victorian company which is a wholly owned subsidiary of the first appellant. Autodesk Australia Pty. Ltd. is the exclusive licensee of Autodesk Inc. throughout Australia with respect to its copyright in AutoCAD.

AutoCAD is sold by dealers. The purchasers receive a package including a number of disks which contain software in the form of the drafting program. It is easy to make copies of these disks and it would appear that many users do so, if only for replacement purposes should the original disks be damaged. Copying for that purpose is permitted under s. 43A of the Copyright Act 1968, (Cth) (the Act). Because the disks are easily copied, there is a danger that persons who have not purchased the disks from an AutoCAD dealer may pirate them by making unauthorized copies. To avoid piracy of this kind, the appellants developed a hardware device, called an "AutoCAD lock", without which the AutoCAD program cannot be run. The lock is plugged into the computer, and peripheral devices, such as printers or monitors, are in turn plugged into the lock. Without the lock in place the computer will not run the AutoCAD program, although other programs may be run with the lock in place. A single lock is supplied with each purchase of the AutoCAD package and cannot be

purchased separately. The cost of an AutoCAD package is approximately $5,200 which includes the price of the AutoCAD lock. Thus, even though a purchaser of AutoCAD might make copies of the disks containing the program, with only one lock he can run only one set of disks at a time. That is the purpose of the AutoCAD lock: to ensure that the purchase of a single AutoCAD package does not result in multiple use of the program.

The third respondent, after making a close examination of the operation of the AutoCAD lock, designed an alternative device, called an Auto Key lock, which performs the same function as the AutoCAD lock. It will be necessary to refer to the precise method employed by the third respondent, but for the moment it is sufficient to note that, with the aid of the first and second respondents, the Auto Key lock was placed upon the market at a price of about $500.

The appellants succeeded before Northrop J in the Federal Court in an action for infringement of copyright *Autodesk Inc. v. Dyason* [1989] 15 IPR 1, but an appeal by the respondents to the Full Court of the Federal Court (Lockhart, Sheppard and Beaumont JJ) was unanimously upheld *Dyason v. Autodesk Inc.* [1990] 24 FCR 147. The appellants now appeal to this Court by special leave.

In *Computer Edge Pty. Ltd. v. Apple Computer Inc.* [1986] 161 CLR 171 this Court held by a majority that, whilst two Apple programs written in source code, (that is, programs devised by programmers in high level computer language) were literary works within the meaning of the Copyright Act and so protected by copyright, the programs "embodied in the ROMs" *ibid*., at p. 183 or "the operational object" programs *ibid*, at p. 210, being neither literary works nor adaptations of the source programs, were not protected by copyright. The decision at first instance in *Apple Computer Inc. v. Computer Edge Pty. Ltd.* [1983] 50 ALR 581, which had denied copyright protection to computer programs, prompted the amendment in 1984 of the Copyright Act to deal specifically with them, but this Court was, of course, obliged upon appeal to apply the law in its unamended form in that case. It is the law in its amended form which applies in these proceedings.

Section 36(1) of the Act provides:

> Subject to this Act, the copyright in a literary, dramatic, musical or artistic work is infringed by a person who, not being the owner of the copyright, and without the licence of the owner of the copyright, does in Australia, or authorizes the doing in Australia of, any act comprised in the copyright.

Section 31(1) sets out those acts comprised in copyright as being the exclusive right:

(a) in the case of a literary, dramatic or musical work, to do all or any of the following acts:

(i) to reproduce the work in a material form;

(ii) to publish the work;

(iii) to perform the work in public;

(iv) to broadcast the work;

(v) to cause the work to be transmitted to subscribers to a diffusion service;

(vi) to make an adaptation of the work;

(vii) to do, in relation to a work that is an adaptation of the first-mentioned work, any of the acts specified in relation to the first-mentioned work in subparas. (i) to (v), inclusive.

The appellants allege that the respondents, by doing the acts specified in para. (a)(i), (vi) and (vii), without their licence, infringed their copyright in a literary work.

The *Copyright Amendment Act* 1984 (Cth) amended the definitions in s. 10(1) of the Act of "literary work", "adaptation" and "infringing copy" and added new definitions of "computer program" and "material form". The definition of "literary work" was amended to include:

(a) a table, or compilation, expressed in words, figures or symbols (whether or not in a visible form); and

(b) a computer program or compilation of computer programs.

A "computer program" was defined as meaning:

an expression, in any language, code or notation, of a set of instructions (whether with or without related information) intended, either directly or after either or both of the following:

(a) conversion to another language, code or notation;

(b) reproduction in a different material form;

to cause a device having digital information processing capabilities to perform a particular function.

Material form" was defined so that:

> in relation to a work or an adaptation of a work, (it) includes any form (whether visible or not) of storage from which the work or adaptation, or a substantial part of the work or adaptation, can be reproduced.

No definition was provided of what constitutes the "reproduction" of a work.

The appellants put their claim in a number of ways but it is sufficient for present purposes to observe that their primary submission was that the literary work in respect of which they alleged breach of copyright is a computer program known as AutoCAD which they claimed is also, in part, contained within the product known as the AutoCAD lock. The respondents, on the other hand, denied that any part of the AutoCAD program is contained in the AutoCAD lock or that the AutoCAD lock contains any computer program at all. They also denied that the Auto Key lock is a reproduction in a material form of the AutoCAD program or any part of it. It was not contested that, under the amended legislation, the AutoCAD program, whether as a source program or as an object program, is itself a computer program within the meaning of the Act and is protected by copyright.

The AutoCAD program is in fact a compilation of programs which together comprise the relevant software. One of those programs is known as Widget C, which operates in conjunction with the AutoCAD lock. The set of instructions contained in Widget C requires the computer to send out challenges to the AutoCAD lock which, in turn, sends its responses back to Widget C. If a response is adjudged correct by Widget C, the computer is instructed to proceed. If it is not, the running of the AutoCAD program ceases. This happens every few seconds during the use of AutoCAD. The challenges from Widget C take the form of changes in voltage, called "transitions", which may be represented in binary notation as either a zero or a one. That is to say, zeros and ones are metaphors used to describe the absence or presence of electrical current. A transition from zero to one represents an upward transition and a transition from one to zero represents a downward transition.

The AutoCAD lock which receives the challenges from Widget C is, unlike Widget C, a piece of hardware or machinery. It is made up of two principal electronic components, one a shift register and the other an exclusive - or gate (XOR). The particular shift register chosen for the AutoCAD lock has eight "cells", each cell being able to hold a one or a zero. Each time a challenge from Widget C represents a downward transition (it may on the evidence be accepted as only downward but it is not important), the digits in the register shift one cell to the left. The digit in the extreme left-hand cell disappears and the cell on the extreme right is empty and available to hold another digit. The digit which is then placed in that cell is determined by the XOR.

The XOR has two input wires and one output wire. Each of the input wires is connected to one of the cells in the shift register - in the case of the AutoCAD lock, the sixth and seventh cells. Each of the input wires expresses the content of the cell to which it is attached. The XOR compares the two. If either one of the input wires, but not both, expresses a one, then the XOR will produce a one as its output. If both the input wires express a zero, the XOR will produce a zero as its output. If both the input wires express a one, the XOR will produce a zero as its output. The device is called an exclusive - or gate because its output will be one only if either of the input wires expresses a one but not if both do so, nor if neither does so. The output digit of the XOR is fed through the output wire to the empty cell on the right-hand of the register. Since the two input wires of the XOR in the AutoCAD lock are connected to the sixth and seventh cells of the shift register, it follows that only when either the sixth or seventh cell contains a one will the output of the XOR be a one; otherwise it will be a zero. The output of the AutoCAD lock in response to a challenge from Widget C (and the input to Widget C) is the content of one cell (the sixth, it would seem) at each step.

The input to Widget C from the AutoCAD lock is therefore in the form of binary digital information, that is, a string of digits, or bits, with the value of either zero or one. The digits are apparently in random order, but the sequence repeats itself after the 127th step. This is called a "wrap-around feature ". Thus the response of the AutoCAD lock to a string of challenges by Widget C is predetermined by the manner in which the lock is wired and is in accordance with a "look-up table" stored in Widget C's memory when read in a particular manner. The look-up table, which is also known as a state machine table, forms a crucial part of Widget C. When Widget C receives the response of the AutoCAD lock to a challenge, it compares it with the correct response which it ascertains from the look-up table. If, and only if, the two correspond, it allows the AutoCAD program to continue running. The 127-bit sequence is known as a pseudo random sequence. It would be virtually impossible to calculate it or duplicate it by accident: in a sequence of 127 binary digits, the possible alternatives would be 2 to the power of 127.

Both the shift register and the XOR in the AutoCAD lock are inexpensive, routine pieces of electrical circuitry which can be bought at electronic hardware shops. It is well known that they can be combined to function as a pseudo random number generator. But the particular sequence of digits which they produce is dependent upon the number of cells in the shift register, the content given to those cells by the user when the operation begins and the choice of cells made by the user for the input to the XOR.

The third respondent obtained an AutoCAD lock and detected that it acted on transitions. By means of an oscilloscope - a device which makes voltage visible on a screen - he was able to observe the electronic signals passing from a computer to the lock and from the lock to the computer while the AutoCAD program was being run on the computer. He did not

dissect the internal electronics of the AutoCAD lock or the program structure of Widget C. He simply detected that every time a downward transition went to the lock it would respond. He then wrote a program which produced a "square wave", that is, a uniform series of transitions (101010101010), which he used to stimulate the AutoCAD lock. He then read the output of the lock over a period of weeks and observed that the pattern of bits emerging repeated itself after 127 bits, so that the sequence was not entirely random. The third respondent realized that all he needed to construct a device which would produce the same output as an AutoCAD lock was something which would store the 127-bit string that he had discovered and would repeat that string endlessly.

What the third respondent chose was an EPROM (Erasable Programmable Read Only Memory), a type of semiconductor chip, to serve as a storage device for a set of digits in a sequence which was the same as that put out by the AutoCAD lock in accordance with Widget C's look-up table. Each "pigeon-hole" of an EPROM can hold a digit and the third respondent filled the first 127 pigeon-holes of the EPROM which he purchased with ones and zeros in the same order as the string of digits which he had observed being put out by the AutoCAD lock. He then wired the EPROM in such a way that, whenever it received a downward transition, the address of a pigeon-hole was stimulated and it put out the appropriate digit in the string. Upon the 128th stimulation the sequence began to repeat itself. In effect, the EPROM operated as a look-up table which produced the same reading as the look-up table which was part of Widget C when read in the manner adopted by Widget C. The EPROM so programmed was incorporated in the Auto Key lock which the respondents produced and marketed as a substitute for the AutoCAD lock.

At first instance, Northrop J upheld the appellants' claim of infringement by adopting a broad construction of the statutory definition of "computer program". He concluded that each of the AutoCAD lock and the Auto Key lock is a "device having digital information processing capabilities to perform a particular function". He took the view that the digital information encoded in the shift register of the AutoCAD lock and the digital information encoded in the EPROM of the Auto Key lock constitute expressions in a "language, code or notation" in the form of electronic signals. He further took the view that this digital information amounts to a "set of instructions" which enables each lock to process the challenges emanating from Widget C (which he regarded as an instruction from Widget C requiring the lock to tell it whether to proceed or stop) and to send a response (an instruction to stop or proceed).

The question for Northrop J then became whether the computer program constituted by the Auto Key lock is a reproduction of the computer program constituted by the AutoCAD lock - whether the work alleged to infringe copyright sufficiently resembles the copyright work and was produced by the use of the copyright work *Computer Edge Pty. Ltd. v. Apple Computer Inc.* [1986] 161 CLR 171. Clearly the Auto Key lock was produced by the use of the AutoCAD lock and his Honour found that the required resemblance is to be found in the fact that "the whole of the function of the AutoCAD lock has been reproduced in a material form by the Auto-Key lock" [1989] 15 IPR, at p. 27. His Honour continued:

> In this context, regard must be had to the function of the computer program in determining resemblance. Physical appearance is immaterial. The hardware or physical equipment within which the expressions of the sets of instructions are contained, is immaterial. The fact that Mr. Kelly (the third respondent) did not see Widget C, nor for that matter, the internal mechanisms of the AutoCAD lock, are immaterial . Mr. Kelly knew of the function of the AutoCAD lock, he discovered how it performed that function, and prepared the expression for his own set of instructions for the Auto-Key lock to enable it to perform the identical function. This constitutes the resemblance between the two computer programs *ibid,* at p. 28.

There is, I think, some confusion in the reasoning employed by Northrop J. The definition of "computer program" by reference to a "set of instructions" requires the identification of the set of instructions in question with some precision. If in this case the encoding of digital information in the AutoCAD lock and in the Auto Key lock constitutes the two relevant sets of instructions for the purpose of comparison, then there is no objective similarity between them because in each instance the digital information itself, and the way in which it is encoded, is different and the operation of each of these devices proceeds by quite different steps. The set of instructions (if they can be called a set of instructions) which causes the AutoCAD lock to produce the digital information to be sent by way of response to Widget C is different from the set of instructions which causes the Auto Key lock to put out the same information. But Northrop J's analysis purports to overcome that difficulty by finding the necessary similarity in the function which each performs, that is, sending particular appropriate responses to Widget C in the form of an "instruction" to stop or proceed.

However, Widget C, which is admittedly a computer program, uses its own set of instructions to process the digital information from either the AutoCAD or the Auto Key lock by consulting its look-up table and causing the computer running AutoCAD to cease or continue. Moreover, it is only the process of comparison which Widget C undertakes between the answers on its look-up table and the response given by the lock which tells the computer whether to cease or continue. The responses given by either the AutoCAD or the Auto Key lock do not in themselves instruct the computer at all; they merely provide some digital information which can serve as the basis for comparison. The digital information which forms the input to Widget C from the AutoCAD lock or the Auto Key lock cannot, therefore, constitute a set of instructions within the meaning of the definition of "computer program".

It may be doubted whether the AutoCAD lock can be said to constitute a set of instructions at all, but not because it is hard-wired. Rather it is because the simple, mechanical responses of the AutoCAD lock (and perhaps even the Auto Key lock) cannot happily, even by way of metaphor, be described as responses to, or the giving of, instructions, particularly instructions in a "language, code or notation". It may be possible at a certain level of discourse to speak, for example, of the operation of an electric light switch as the giving of an instruction to the mechanism to turn on the light, but it is an unusual use of language. The steps taken in the operation of the AutoCAD lock involve no more than the steps taken in the operation of an ordinary household electric light switch and so may be thought not to amount to the embodiment of any logical process requiring the use of a language, code or notation such as is required for the expression of a computer program in a more conventional sense. Moreover, so far as the AutoCAD lock is concerned, it is not possible to identify any instructions beyond the inherent characteristics of its component parts, namely, the shift register and the XOR.

But there is no need to pursue these questions to a conclusion, or to suggest any particular test for determining what is a computer program within the meaning of the statutory definition, for, even assuming that each of the two locks contains a set of relevant instructions, the fact that they do produce the same output in response to a challenge - the fact that they both perform the same function - does not mean that there is any similarity between the two sets of instructions. The fact that each of the two devices has a set of instructions which causes it to perform a particular function which is the same does not mean that each set of instructions (being the instructions which cause the device to use its digital information processing capabilities to perform that function) is the same.

Indeed, the significance placed by Northrop J upon the function of the two locks would appear to be in disregard of the traditional dichotomy in the law of copyright between an idea and the expression of an idea. As Lindley LJ said in *Hollinrake v. Truswell* [1894] 3 Ch 420:

> Copyright ... does not extend to ideas, or schemes, or systems, or methods; it is confined to their expression; and if their expression is not copied the copyright is not infringed.

The distinction has been criticized and it is true that it is often difficult to separate an idea from its expression, but it is nevertheless fundamental that copyright protection is given only to the form in which ideas are expressed, not to the ideas themselves. The protection of ideas, at all events when the subject of manufacture, is the province of patent law. There is a particular difficulty in distinguishing an idea from its expression in the case of a utilitarian work, such as a computer program, which, in contrast to literary works of an artistic kind, is intended to be useful rather than to please. But it has been held that the idea of a utilitarian work is its purpose or function and that the method of arriving at that purpose or function is the expression of the idea: see *Whelan Associates v. Jaslow Dental Laboratory* [1986] 797 F. 2d 1222, citing *Baker v. Selden* [1879] 101 US 99. Thus, when the expression of an idea is inseparable from its function, it forms part of the idea and is not entitled to the protection of copyright *Lotus Dvpt. Corp. v. Paperback Software International* [1990] 18 IPR 1. *Whelan Associates v. Jaslow Dental Laboratory* was a case which was concerned with a computer program, the purpose or function of which was to assist in keeping records of the business operations of a dental laboratory. It was held that the computer program was the subject of copyright because it was only one of a number of programs of different structure and organization which might be used to achieve the same end.

An opposite approach was adopted in this case by Northrop J. He held that, because the AutoCAD lock and the Auto Key lock each performed the same function, there was an infringement of copyright. He was of the view that the dissimilar manner in which the two locks operated went only to a difference in material form which did not prevent the Auto Key lock being a reproduction of the AutoCAD lock. There was, he said, a "sufficient degree of objective similarity" to constitute the one a reproduction of the other. Such an approach cannot be sustained upon accepted principles and was rejected by the Full Court of the Federal Court upon appeal.

In the Full Court it was held that neither the AutoCAD lock nor the Auto Key lock was, or incorporated, a computer program, both being devices which worked by mere automatic response without the structure necessary to constitute a computer program. A majority (Lockhart and Sheppard JJ; Beaumont J not deciding) were prepared to regard Widget C and the AutoCAD lock as an integrated system which constituted a computer program within the meaning of the Act. But, it was held, the Auto Key lock did not amount to a reproduction of any program and the mere fact that it performed the same function as the AutoCAD lock did not mean that it had a sufficient degree of objective similarity to AutoCAD to amount to a breach of copyright.

There is no reason to doubt the conclusion of the majority in the Full Court that Widget C and the AutoCAD lock constitute the one system (although it may be artificial to say that they constitute the one computer program). But it is of little consequence if, as was submitted by the appellants, the infringement of copyright which has occurred is the reproduction of a substantial part of the AutoCAD program, more particularly, the program in Widget C. For

Widget C admittedly is a computer program and the only question which that submission raises is whether the Auto Key lock reproduces a substantial part of Widget C. In considering that question s. 14(1) of the Act is relevant. That section provides:

In this Act, unless the contrary intention appears:

(a) a reference to the doing of an act in relation to a work or other subject-matter shall be read as including a reference to the doing of that act in relation to a substantial part of the work or other subject-matter; and

(b) a reference to a reproduction, adaptation or copy of a work shall be read as including a reference to a reproduction, adaptation or copy of a substantial part of the work, as the case may be.

It is not, in my view, necessary that the reproduction of a substantial part of a computer program should itself be a computer program within the meaning of the definition of "computer program" in the Act. Perhaps undue attention was given in the courts below to the two locks in question to ascertain whether either or both contained a computer program. For Widget C is a computer program and a substantial, indeed essential, part of that program is the look-up table by reference to which Widget C processes the information which it receives from the AutoCAD lock. The Auto Key lock reproduces that look-up table in the EPROM which it uses. The EPROM contains a set of digits which is identical with the set of digits produced by the look-up table when read as Widget C reads it. In effect, both Widget C and the Auto Key lock contain the same look-up table.

The set of instructions for Widget C in source code (C language) was in evidence. These instructions contain in decimal form precisely the same sequence produced in binary form by the look-up table in the EPROM of the Auto Key lock. Whilst the 127-bit look-up table does not of itself constitute a computer program within the meaning of the definition - it does not by itself amount to a set of instructions - it is a substantial part of Widget C and its reproduction in the Auto Key lock is a reproduction of a substantial part of that program. It is a reproduction of a substantial part of that program in a material form for, by definition, "material form" in relation to a work includes any form (whether visible or not) of storage from which a substantial part of the work can be reproduced. The EPROM contained in the Auto Key lock is clearly a form of storage from which the sequence of numbers in the look-up table in Widget C can be reproduced.

The third respondent copied the look-up table in Widget C indirectly only by copying the sequence of numbers put out by the AutoCAD lock. But copyright may be infringed by copying something which is a copy of the copyright work; indeed, that is the most common form of infringement. The sequence of numbers put out by the AutoCAD lock is clearly a copy of the sequence in the look-up table in Widget C. Indeed, it is essential that it should be so for the lock to operate as intended. The sequence of numbers incorporated in the EPROM in the Auto Key lock is a copy of the sequence put out by the AutoCAD lock. It is not something which the third respondent arrived at by means of his own calculations.

The definition of "literary work" in the Act as amended includes "a table, or compilation, expressed in words, figures or symbols (whether or not in a visible form)" and it would seem that, in addition to being a substantial part of a computer program, the look-up table in Widget C is a table or compilation within the meaning of that definition. Dixon J expressed the applicable principle in *Victoria Park Racing and Recreation Grounds Co. Ltd. v. Taylor* [1937] 58 CLR 479, at p. 511 where he said:

> No doubt the expression 'literary work' includes compilation. The definition section says so ... But some original result must be produced. This does not mean that new or inventive ideas must be contributed. The work need show no literary or other skill or judgment. But it must originate with the author and be more than a copy of other material.

In the present case there can be no doubt about the originality of authorship of the look-up table expressed as it is in Widget C. But no reliance was placed upon it as a literary work in itself. It is enough that it forms a substantial part of a computer program which is a literary work in itself in respect of which copyright is vested in the first appellant. It is curious, particularly in the light of *Computer Edge Pty. Ltd. v. Apple Computer Inc.*, that the draftsman of the 1984 amendments to the Act added the words "whether or not in a visible form" when amending the reference to a table or compilation in the definition of "literary work", but did not do so when including a computer program or compilation of computer programs in the same definition. But the definition of "computer program" makes it plain that a computer program may be in any language, code or notation and need not be in a visible form and the definition of "material form" indicates that the reproduction of a computer program need not be visible see Gaze, *Copyright Protection of Computer Programs*, (1989), pp. 124-125.

For the foregoing reasons, I would conclude that the production of the Auto Key lock constitutes an infringement of the copyright in the AutoCAD program, in particular, Widget C. That being the only question in respect of which the appellants retained special leave to appeal, I would allow the appeal. As I have said, the appellants put their case in a number of ways and, I think, it is fair to say that the basis upon which I have concluded that the appeal may be determined was not in the forefront of their submissions. But, having given the matter consideration, I am persuaded that the argument was sufficiently put to enable the appeal to be disposed of upon that basis.

Also found at [1992] 2 CLJ 761